

### **REMARKS**

At the outset, Applicants acknowledge with appreciation the courtesy of Examiner Ives Wu and Supervisory Patent Examiner (SPE) Duane Smith in conducting the April 28, 2009 personal interview. During the personal interview, Applicant, Applicant's representative, Examiner Ives and SPE Smith discussed proposed claim amendments and arguments that would overcome the rejection of claims 1-4 under 35 U.S.C. § 103. During the interview, Examiner Ives and SPE Smith also indicated that the proposed amendments "overcome the prior art GB 1499536 [to Mucenieks]" (April 28, 2009 Interview Summary).

Claims 1-4 are pending in this application.

Claims 1, 2 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over GB Patent No. 1499536 to Mucenieks ("Mucenieks") in view of U.S. Patent No. 5,108,731 to Schoubye ("Schoubye"), as evidenced by U.S. Patent No. 5,017,350 to Hakka et al. ("Hakka") and U.S. Patent No. 3,953,578 to Thirion ("Thirion"). Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Mucenieks in view of Schoubye and further in view of U.S. Patent No. 4,678,481 to Diep ("Diep"), as evidenced by U.S. Patent Appl. Publ. No. 2004/0062697 to Mortson et al. ("Mortson"). These rejections are respectfully traversed.

The subject matter of claims 1-4 would not have been obvious over the cited prior art references, considered alone or in combination. First, Mucenieks does not teach or suggest oxidation of SO<sub>2</sub> to H<sub>2</sub>SO<sub>4</sub> "without the use of an absorption tower," as claim 1 recites. Mucenieks emphasizes that "the waste gas stream is contacted with the aqueous hydrogen peroxide solution in *any conventional contacting device*" (p. 3, ll. 65-67; *emph. added*). By definition, "any conventional contacting device" known in the art includes an absorption tower. Thus, Mucenieks teaches against a process of oxidizing SO<sub>2</sub> to H<sub>2</sub>SO<sub>4</sub> "without the use of an absorption tower," as in the claimed invention.

Second, Mucenieks does not disclose or suggest "oxidizing the SO<sub>2</sub> to H<sub>2</sub>SO<sub>4</sub> without the use of an absorption tower by spraying an aqueous solution of H<sub>2</sub>O<sub>2</sub> into the off-gas upstream of

an aerosol filter to form  $\text{H}_2\text{SO}_4$  by reaction in the gas phase between  $\text{SO}_2$  and  $\text{H}_2\text{O}_2$ ,” as claim 1 recites. Muceniaks teaches absorption and oxidation of an off-gas upstream by treatment of a waste gas stream with a basic hydrogen peroxide solution (to absorb and oxidize the sulfur-containing gas, p. 1, ll. 73-74), and not “gas phase reaction between  $\text{SO}_2$  and  $\text{H}_2\text{O}_2$ ” into an aerosol filter, as in the claimed invention. Because of its reaction conditions, Muceniaks also does not disclose or suggest “removing the produced sulphuric acid from the off-gas in the aerosol filter,” as in the claimed invention. In Muceniaks, “the sulfur-containing gases are converted to non-polluting alkali metal sulfates and sulfonates” (as a result of the hydrogen peroxide solution with a pH greater than 7), and not to  $\text{H}_2\text{SO}_4$ .

Third, there is no motivation for one skilled in the art to combine Muceniaks with Schoubye to arrive to the claimed invention, as the examiner asserts. In the Office Action dated September 3, 2008, the examiner (addressing the passage on page 3, lines 65-67 of Muceniaks) states that “the waste gas stream is contacted with the aqueous hydrogen peroxide solution in any conventional contacting device,” noting that it is obvious not to use the absorption tower as claimed. Even if trying to ignore the teaching of Muceniaks (which clearly teaches the use of an absorption tower, as revealed throughout the entire reference and explicitly disclosed in the cited passage on page 3, lines 65-67 and in the examples), a person skilled in the art would still at least consider using any conventional contacting device other than the absorption tower. Muceniaks does not suggest in any way that one may omit the use of a contacting device such as an absorption tower. Muceniaks teaches that there is no need of an aerosol filter downstream (as acknowledged by the examiner) and Muceniaks also teaches the need of using an absorption tower or a conventional contacting device.

Starting with Muceniaks and looking for solutions to the problem addressed in the present application (i.e., how to provide a simpler process for the removal of  $\text{SO}_2$  from off-gases), a person skilled in the art would consider Schoubye. Nevertheless, a person of ordinary skill in the art doing so would only find a teaching on how to design the acid mist filter. The combination of Muceniaks and Schoubye results simply in a process containing an absorption tower (or any

conventional contacting device) and an acid mist filter, which represent the conventional technology and not the invention as claimed in claim 1.

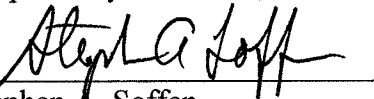
Thirion and Hakka, alone or in combination, fail to address the deficiencies of Mucenieks. The combination of these references still results in a process containing an absorption tower (or any conventional contacting device) and an acid mist filter or a demister and the like. Thus, the Office Action fails to establish a *prima facie* case of obviousness, and withdrawal of the rejection of claims 1, 2 and 4 is respectfully requested.

With respect to the rejection of dependent claim 3, Applicants maintain all remarks and comments with respect to the patentability of this claim in view of Mucenieks, Schoubye, Diep and Mortson, as set forth in the Request for Reconsideration dated December 8, 2008.

Allowance of all pending claims is solicited.

Dated: May 5, 2009

Respectfully submitted,

By   
Stephen A. Soffen

Registration No.: 31,063

Gabriela I. Coman

Registration No.: 50,515

DICKSTEIN SHAPIRO LLP

1825 Eye Street, NW

Washington, DC 20006-5403

(202) 420-2200

Attorneys for Applicants